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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/835,903	04/16/2001	Nagabhushana T. Sindhushayana	010067	5512
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QUALCOMM INCORPORATED 5775 MOREHOUSE DR. SAN DIEGO, CA 92121			EXAMINER TORRES, JOSEPH D	
			ART UNIT 2112	PAPER NUMBER
			NOTIFICATION DATE 09/05/2007	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 09/835,903	Applicant(s) SINDHUSHAYANA ET AL.	
	Examiner Joseph D. Torres	Art Unit 2112	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08/09/2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-62 is/are pending in the application.
- 4a) Of the above claim(s) 9-32 and 41-62 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 33-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of claims 1-8 and 33-40 (Group I) in the reply filed on 08/09/2007 is acknowledged.

Claims 9-32 and 41-62 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected inventions, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 08/09/2007.

Specification

2. Claim 1 recites, "the processed data sets are encoded in relation to a first threshold with an associated first probability". Claim 33 recites, "the processed data sets are encoded in relation to a first threshold with an associated first probability". There is no antecedent basis in the specification for such language. Appropriate correction is required.

Claim Objections

3. Claims 1-8 and 33-40 are objected to because of the following informalities: Claim 1 recites, "the processed data sets are encoded in relation to a first threshold with an associated first probability". Claim 33 recites, "the processed data sets are encoded in relation to a first threshold with an associated first probability". There is no

Art Unit: 2112

antecedent basis in the specification for such language. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-8 and 33-40 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 1 recites, "the processed data sets are encoded in relation to a first threshold with an associated first probability". Claim 33 recites, "the processed data sets are encoded in relation to a first threshold with an associated first probability". Nowhere does the specification teach the use of a threshold for encoding. Page 8, paragraph [1024] in the Applicant's specification, which the Applicant cites for support only teaches a threshold S used in the design of a C1 code. Nowhere does the Applicant teach the use of a threshold for encoding in an existing encoding device.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Art Unit: 2112

Claims 1-8 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: any connection between a threshold and encoding in an existing encoding device.

Claims 33-40 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The claims omit any structural element in an existing encoder for providing a threshold or any connection between a structural element in an existing encoder for providing a threshold and the existing encoding device.

Response to Arguments

5. Applicant's arguments filed 06/01/2007 have been fully considered but they are not persuasive.

The Applicant contends that the limitation, "the processed data sets are encoded in relation to a first threshold with an associated first probability" in claims 1 and 33 is not taught in Kuroda.

The Applicant cites page 8, paragraph [1024] in the Applicant's specification for interpreting the new limitation. Page 8, paragraph [1024] in the Applicant's specification

Art Unit: 2112

teaches that the threshold is used in designing the encoder by selecting a C1 code to satisfy a particular threshold relationship.

Figure 11 in Kuroda teaches that the error correction code in Kuroda is designed so that if the bit error rate of unencoded data BER is at a particular threshold on the horizontal axis, then the encoded Block/packet will achieve a second Block/packet error rate BLER at a second threshold. Bit and Block error rate are substantially an error probability.

Note: if the BER of unencoded data is below 10^{-2} in Figure 10 and 11, then the BER of the encoded data in Kuroda will be below 10^{-6} and the BLER of the encoded packets will be about 10^{-5} . Hence Kuroda provides design thresholds in the Kuroda patent for explaining the design of the error correction codes in Kuroda.

The Examiner disagrees with the applicant and maintains all rejections of claims 1-8 and 33-40. All amendments and arguments by the applicant have been considered. It is the Examiner's conclusion that claims 1-8 and 33-40 are not patentably distinct or non-obvious over the prior art of record in view of the references, Kuroda; Toru et al. (US 5432800 A, hereafter referred to as Kuroda) in view of Cox; Charles Edwin et al. (US 5946328 A, hereafter referred to as Cox) in view of Sayeed; Zulfiquar et al. (US 5828677 A, hereafter referred to as Sayeed) as applied in the last office action, filed 08/09/2007. Therefore, the rejection is maintained.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 2, 4 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Kuroda; Toru et al. (US 5432800 A, hereafter referred to as Kuroda).

35 U.S.C. 102(b) rejection of claim 1.

Kuroda teaches processing each of a plurality of data sets to generate a processed data set and a parity block for each data set (Figure 4 in Kuroda teaches processing each of a plurality of data sets comprising 190 bits to generate a processed data set and a parity block for each data set); processing the parity blocks to generate at least one packet (Col. 1, lines 45-47 and Figure 12 in Kuroda teaches that a packet is comprised of 190 bits of information along with CRC parity); and transmitting the processed data sets and the at least one packet (Figure 1 in Kuroda).

As per newly added limitation: "the processed data sets are encoded in relation to a first threshold with an associated first probability" in claims 1 and 33 is not taught in Kuroda.

The Applicant cites page 8, paragraph [1024] in the Applicant's specification for interpreting the new limitation. Page 8, paragraph [1024] in the Applicant's specification teaches that the threshold is used in designing the encoder by selecting a C1 code to satisfy a particular threshold relationship.

Figure 11 in Kuroda teaches that the error correction code in Kuroda is designed so that if the bit error rate of unencoded data BER is at a particular threshold on the horizontal axis, then the encoded Block/packet will achieve a second Block/packet error rate BLER at a second threshold. Bit and Block error rate are substantially an error probability.

Note: if the BER of unencoded data is below 10^{-2} in Figure 10 and 11, then the BER of the encoded data in Kuroda will be below 10^{-6} and the BLER of the encoded packets will be about 10^{-5} . Hence Kuroda provides design thresholds in the Kuroda patent for explaining the design of the error correction codes in Kuroda.

35 U.S.C. 102(b) rejection of claims 2, 4 and 5.

Figure 4 of Kuroda teaches encoding each of the plurality of data sets with a first code to provide a coded data set (CRC in Figure 4 is a first code); and encoding each of the coded data sets with a systematic code to provide the parity block (First parity field in Figure 4 is a second systematic code).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 3 and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroda; Toru et al. (US 5432800 A, hereafter referred to as Kuroda) in view of Sayeed; Zulfiquar et al. (US 5828677 A, hereafter referred to as Sayeed).

35 U.S.C. 103(a) rejection of claim 3.

Kuroda substantially teaches the claimed invention described in claims 1 and 2 (as rejected above). In addition, Figure 4 of Kuroda teaches encoding each of the plurality of data sets with a first code to provide a coded data set (CRC in Figure 4 is a first code).

However Kuroda does not explicitly teach the specific use of puncturing.

Sayeed, in an analogous art, teaches use of puncturing (Figure 2C in Sayeed teaches puncturing).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kuroda with the teachings of Sayeed by including use of puncturing. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would

Art Unit: 2112

have recognized that use of puncturing would have provided an adaptive coding environment (abstract in Sayeed).

35 U.S.C. 103(a) rejection of claim 6.

Second parity in Figure 4 of kuroda is a third code and Figures 2A-2F in Sayeed teach fourth, fifth, sixth, etc. codes.

35 U.S.C. 103(a) rejection of claim 7.

Figure 4 of kuroda is a third code and Figures 2A-2F in Sayeed.

35 U.S.C. 103(a) rejection of claim 8.

Block 37 in Figure 2D of Sayeed.

8. Claims 33, 34, 36 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroda; Toru et al. (US 5432800 A, hereafter referred to as Kuroda) in view of Cox; Charles Edwin et al. (US 5946328 A, hereafter referred to as Cox).

35 U.S.C. 103(a) rejection of claim 33.

Kuroda teaches processing each of a plurality of data sets to generate a processed data set and a parity block for each data set (Figure 4 in Kuroda teaches processing each of a plurality of data sets comprising 190 bits to generate a processed data set and a parity block for each data set); processing the parity blocks to generate at least one

Art Unit: 2112

packet (Col. 1, lines 45-47 and Figure 12 in Kuroda teaches that a packet is comprised of 190 bits of information along with CRC parity); and transmitting the processed data sets and the at least one packet (Figure 1 in Kuroda).

As per newly added limitation: "the processed data sets are encoded in relation to a first threshold with an associated first probability" in claims 1 and 33 is not taught in Kuroda.

The Applicant cites page 8, paragraph [1024] in the Applicant's specification for interpreting the new limitation. Page 8, paragraph [1024] in the Applicant's specification teaches that the threshold is used in designing the encoder by selecting a C1 code to satisfy a particular threshold relationship.

Figure 11 in Kuroda teaches that the error correction code in Kuroda is designed so that if the bit error rate of unencoded data BER is at a particular threshold on the horizontal axis, then the encoded Block/packet will achieve a second Block/packet error rate BLER at a second threshold. Bit and Block error rate are substantially an error probability.

Note: if the BER of unencoded data is below 10^{-2} in Figure 10 and 11, then the BER of the encoded data in Kuroda will be below 10^{-6} and the BLER of the encoded packets will be about 10^{-5} . Hence Kuroda provides design thresholds in the Kuroda patent for explaining the design of the error correction codes in Kuroda.

However Kuroda does not explicitly teach the specific use of a storage medium for executable instructions.

Cox, in an analogous art, teaches use of a storage medium for executable instructions (col. 14, claim 13).

Art Unit: 2112

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kuroda with the teachings of Cox by including use of a storage medium for executable instructions. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of a storage medium for executable instructions would have provided a flexible means for implementing an ECC method (Note: software solutions provide considerable flexibility and scalability over hardware solutions).

35 U.S.C. 102(b) rejection of claims 34, 36 and 37.

Figure 4 of Kuroda teaches encoding each of the plurality of data sets with a first code to provide a coded data set (CRC in Figure 4 is a first code); and encoding each of the coded data sets with a systematic code to provide the parity block (First parity field in Figure 4 is a second systematic code).

9. Claims 35 and 38-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroda; Toru et al. (US 5432800 A, hereafter referred to as Kuroda) in view of Cox; Charles Edwin et al. (US 5946328 A, hereafter referred to as Cox) in further view of Sayeed; Zulfiquar et al. (US 5828677 A, hereafter referred to as Sayeed).

35 U.S.C. 103(a) rejection of claim 35.

Kuroda and Cox substantially teaches the claimed invention described in claims 33, 34, 36 and 37 (as rejected above). In addition, Figure 4 of Kuroda teaches encoding each of the plurality of data sets with a first code to provide a coded data set (CRC in Figure 4 is a first code).

However Kuroda and Cox does not explicitly teach the specific use of puncturing.

Sayeed, in an analogous art, teaches use of puncturing (Figure 2C in Sayeed teaches puncturing).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kuroda and Cox with the teachings of Sayeed by including use of puncturing. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of puncturing would have provided an adaptive coding environment (abstract in Sayeed).

35 U.S.C. 103(a) rejection of claim 38.

Second parity in Figure 4 of kuroda is a third code and Figures 2A-2F in Sayeed teach fourth, fifth, sixth, etc. codes.

35 U.S.C. 103(a) rejection of claim 39.

Figure 4 of kuroda is a third code and Figures 2A-2F in Sayeed.

35 U.S.C. 103(a) rejection of claim 40.

Block 37 in Figure 2D of Sayeed.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph D. Torres whose telephone number is (571) 272-3829. The examiner can normally be reached on M-F 8-5.

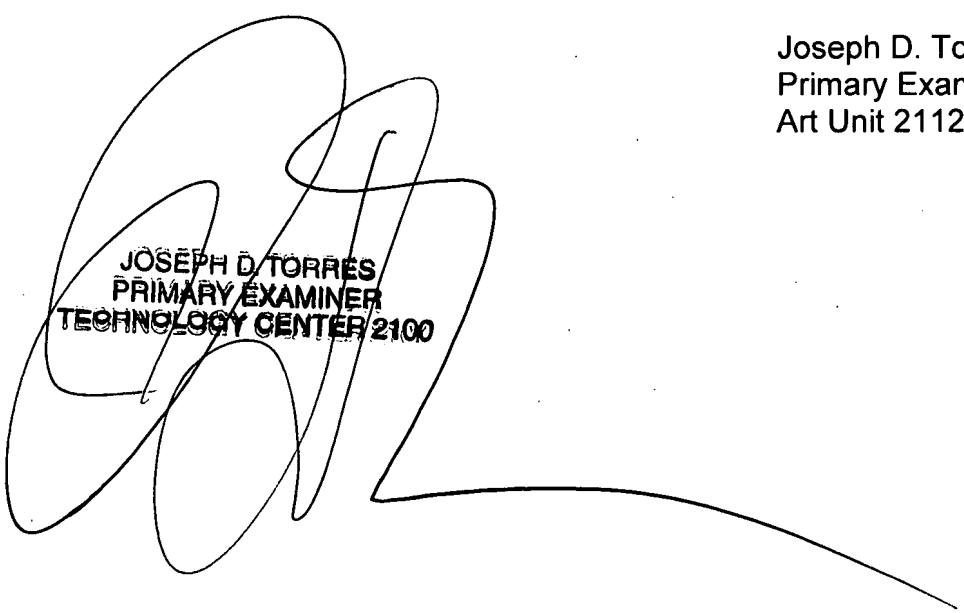
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jacques Louis-Jacques can be reached on (571) 272-6962. The fax phone

Art Unit: 2112

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Joseph D. Torres, PhD
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